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AUTHOR Allen, David
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ABSTRACT

This study examined the impact of precollege variables and three motivational factors on retention and grades of 581 high risk college freshmen. The precollege variables were gender, ethnicity, parental education, financial aid status, and high school rank. The motivational factors were identified from the Noel-Levitz College Student Inventory (CSI) and included: (1) desire to finish college, (2) impression of the institution, and (3) family emotional support. The study tracked for one year the persistence and grade point average of 581 Fall, 1994 first-time, full-time freshmen who were deemed to be at risk of dropping out. The study found the hypothesized causal model was valid in explaining student motivational factors of both minorities and nonminorities in relation to both academic performance and persistence. With respect to the three motivational constructs, the model explained as much variance among minorities as it did among nonminorities. The model accounted for 51 percent of the variance in minority student persistence and 45 percent in nonminority student persistence. Tables provide details of the variables, factor analysis, statistical correlations, and variance. (Contains 20 references.) (JLS)

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THE HUNGER FACTOR IN STUDENT RETENTION: AN ANALYSIS OF MOTIVATION

BY:

DR. DAVID ALLEN
FORMER DIRECTOR OF INSTITUTIONAL PLANNING, ASSESSMENT AND RESEARCH
ANGELO STATE UNIVERSITY, SAN ANGELO, TX
CURRENTLY ASSISTANT PROFESSOR OF EDUCATION/PSYCHOLOGY &
FORMER DIRECTOR OF STUDENT RETENTION
WILLIAM CAREY COLLEGE
498 TUSCAN AVENUE
HATTIESBURG, MS 39402
Telephone: (601) 271-2584
Email: dfallen@aol.com



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**Jean Endo
Editor
AIR Forum Publications**

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ABSTRACT

What are the driving forces behind student persistence and academic success in college? Using both factor and path analysis as well as linear structural equation modeling procedures (LISREL), this study examines the impact of three key motivational factors on retention and grades emanating from an analysis of Noel-Levitz' College Student Inventory (CSI): Desire to finish college; Impression of the institution; and Family Emotional Support. Using a student tracking program from the Texas Higher Education Coordinating Board, 581 Fall 1994 first-time, full-time freshmen who had taken the CSI and deemed "at risk" of dropping out were tracked for one year. Retention results indicate that motivational factors can be used as valid predictors of student persistence behavior. This study demonstrates that there is an indirect but important link between student's motivation and subsequent persistence behavior and that this link is through desire to finish college, impression of the institution, and family emotional support. The hypothesized causal model was valid in explaining precollege motivational factors of both minorities and nonminorities.

INTRODUCTION

What motivates students to stay in or drop out of college? This has been an educator's conundrum for decades. Tinto (1996) reports that over half (57 percent) of all dropouts from four year institutions leave before the start of their second year and that 40 percent of all students in America who start at a four year college fail to earn a degree.

In spite of this trend, enrollments are at an all time high (Kramer, 1993) which supports the notion that the American dream of obtaining a college degree is alive and well. This demand for access coupled with the current economic crisis in higher education has lead policymakers to seek legitimate indices of U.S. educational progress. Two such outcome measures, persistence and graduation rates, are now common approaches to estimating efficiency. In order to enhance retention and student success, colleges and universities are challenged with understanding the process and dynamics of educational attainment. Unfortunately, most institutions of higher learning are, generally speaking, oblivious to student goals, plans, expectations and motivations (Allen and Nora, 1995; Brower, 1992). For example, their assumption seems to be that all first-time, full-time freshmen are motivated to complete college. This assumption may be premature considering little work has been done in the area of investigating the role of motivation on the adjustment of students to college.

Student motivation to achieve in college can be seen as an important noncognitive dimension of the persistence phenomenon. Ramist (1981) claims that student motivational factors are the sine qua non of persistence and therefore should be treated as the most important target of persistence research. Others cite level of motivation and effort as the single best predictor of academic success (Arcuri, Daly, and Mercado, 1982). In spite of these assertions, little work has been done in investigating the supposition that motivation, as a noncognitive factor, is predictive of college grades and persistence for African American and Hispanic students.

The purpose of this study was to investigate the role of precollege background variables, motivational factors, and persistence behaviors among minority and nonminority students. In particular, this study sought to (1) assess the direct and indirect effects of motivational factors on persistence behavior and academic performance in college and (2) determine the extent to which precollege motivation differs in its impact on persistence and academic performance for minorities and nonminorities.

THE MODEL

Patterned after Tinto's (1987) Student Integration Model, the model proposed in the present study is restricted to opposite ends of the freshman persistence spectrum. That is, it explores precollege factors at the beginning of the year and their subsequent influence on academic performance and actual persistence behavior at the end of the first

year. Figure 1 displays a structural model focused on external factors impacting persistence and the hypothesized interactions that motivation plays in the process. Research findings have largely supported the predictive validity of the model where precollege variables are concerned (Pascarella and Terenzini, 1979, 1980, 1991). Specifically, the model hypothesized in this study presupposes that precollege academic ability, other student background characteristics, and motivational factors have a direct influence on college academic performance and persistence decisions and that these variables have a stronger effect for minorities than they do for nonminorities.

High school rank was selected as a measure of precollege academic ability in this study and is consistent with Tinto's proposition that academic preparation for college may be particularly critical for persistence decisions among minority students. Tinto (1987) argued that overall differences in persistence rates between minorities and nonminorities were primarily due to differences in their academic preparedness rather than differences in their socioeconomic backgrounds. Nora and Cabrera (1996) examined minority and nonminority freshmen adjustment to college and found that ill prepared students tend to dropout, regardless of ethnic status.

The model regards financial aid status and parent's education as factors facilitating the transition of the student to college. It is believed that being a recipient of financial aid exerts a positive influence on a student's academic ability and motivation to persist.

Desire to finish college as a noncognitive factor can be seen as a component of achievement motivation as a subheading under self-determination. Such desire is a form of exerting effective control over one's environment. White's (1959) seminal theoretical work proposed that this need for control was a fundamental impetus to human behavior. The question of self determination as it relates to desire to finish college could be expressed as, "Why am I really going to college?"

Institutional impression can be seen as another component of motivation to persist and a subcomponent under the construct intrinsic-extrinsic motivation. It is commonly understood that the first few weeks of the first semester at an institution is considered a crucial period in determining retention. From this it follows that the initial impression of the institution may be related to the persistence process.

Family emotional support as a subcomponent under the perceptions of competence construct is another key component in motivating students to persist. The influence of significant others on feelings of competence is well documented in the literature. Encouragement by others can be seen as a form of family emotional support in that it is a measure as the amount of interest and encouragement expressed by parents. Nora and Cabrera (1996) found that for both minorities and nonminorities parental encouragement exerted a positive effect on the integration of students to

college, on their academic and intellectual development, and on their academic performance and commitments. Parental encouragement was found to exert a significant total effect on persistence decisions for both groups.

METHODOLOGY

Sample

The freshman year was the focus of the present study because it is most critical in shaping persistence decisions (Astin, 1993; Pascarella and Terenzini, 1991; and Tinto, 1987). This coupled with the fact that minority students are more likely to attend predominately white institutions (Mow and Nettles, 1990), year in college and race were primary considerations guiding sample selection in this study. The study institution consistently loses approximately forty percent of its students between the end of the first academic year and the beginning of the second year. This is the period of highest attrition at the institution.

Data were collected during the 1994-95 and 1995-96 academic years. The student population was drawn from the fall 1994 entering class at a medium-sized, public, four year, regional institution in the southwest. Only first-time, full-time freshmen, who were registered as of the twelfth class day in September 1994, were US citizens under 20 years of age, and not married, were selected. Of the 1,000 freshmen who met these criteria, over half, or 581, completed the motivation assessment instrument.

At the beginning of their second year, transcripts of the fall 1994 cohort were accessed to identify gender, ethnicity, financial aid status, high school rank, and cumulative freshman grade point average as of the beginning of the second academic year. A statewide student tracking system based on social security numbers was used at the beginning of the second year to identify enrollment status. Students were categorized in one of three areas: persisters at the University, transfers elsewhere, or drop outs. While evidence suggests that forced withdrawals are significantly different from voluntary withdrawals (e.g., Cope and Hannah, 1975), students academically suspended were not eliminated from this study since assessments of motivation were hypothesized to be linked to first year academic performance.

The composition of the sample was 76.1 percent white, 18.1 percent Hispanic, 4.1 percent African American, and 1.7 percent Asian American. Comparisons between the sample and the target population indicated that the sample well represented the population with regard to persistence behavior (persisters: 60.5 percent versus 58.1 percent), gender (females: 51.5 percent versus 50.7 percent), race (Hispanics, African Americans, and Asian Americans: 18.1, 4.1, 1.7 percent versus 17.7, 5.1, 2.1 percent, respectively), financial aid status (yes: 69.5 percent versus 66.5 percent), high school rank (70.89 versus 69.24), and academic performance in college (2.36 versus 2.26).

Measurement and Variables

The construct, motivation, was operationalized and quantified based on results of Noel and Levitz's College Student Inventory (1993). During the fall 1994 registration period, freshmen were asked to complete a 194-item survey designed to assess both risk level and student needs. Data from the CSI were then linked with other variables previously described (see Table 1). As a "dropout predictor," the CSI is designed to measure eventual dropout, over a four- or five-year period, rather than after only one year. Nevertheless, the CSI has reasonable reliability ($r=.80$) among its 19 major independent scales and high validity ($r=.61$) for predicting first-year college GPA. After approximately two weeks into the semester, the Noel/Levitz Center returned the CSI results. Upon receipt of the Noel/Levitz data set, a series of exploratory factor analyses were conducted to guide the selection of items and development of scales. Nineteen items were retained as a result of this process. Three factors labeled desire to finish college, institutional impression, and family emotional support accounted for 39.5 percent of the variance observed in the correlation matrix yielded by the principal components exploratory factor analysis. Reliabilities for these factors were .76, .85, and .81, respectively. Items in each factor had loadings in excess of .55. Table 2 depicts the loadings and proportion of variance accounted for by each factor after varimax rotation.

Background Variables. A total of five precollege variables were assessed: gender, ethnicity, parental education, financial aid status and high school rank. All but parental education were extracted from university records. Parental education was taken from the CSI as a composite of the education level of both parents. Financial aid status was a dichotomous variable simply measuring whether the student had received any type of financial aid during the freshman year. Ethnicity was dichotomized as either minority or nonminority. This was done because disaggregation of the variable by minority group was not methodologically possible. PRELIS requires specific sample sizes to compute matrices (Joreskog, 1993). A sample size of 139 needed for each minority subgroup fell below the required threshold (i.e., $1.5 \cdot n(n+1)$, where n is the number of variables included in the model).

Motivational Constructs. The three major motivational components of desire to finish college (6 items), institutional impression (7 items), and family emotional support (6 items) are described in Table 2 and were measured via a Likert scale ranging from 1 (not at all true or very dissatisfied) to 7 (completely true or completely satisfied). Scale scores were based on averages across respective items. Negatively phrased items were reverse scored for consistency with other items in corresponding scales.

Academic Performance (GPA). This was the students' cumulative freshman grade point average extracted from university records for the period fall 1994 through summer 1995.

Persistence Behavior. Persistence, a dichotomous variable, was defined as the student's enrollment status in the fall 1995 semester. Students who dropped after one year and did not transfer were coded as "1" (n=144). Those who reenrolled in fall 1995 were coded as "2" (n=437). Transfers were omitted since they were not the focus of the study.

Thus, there were 10 measures in the study: sex, ethnicity, high school rank, parent's education, financial aid, three motivational variables, cumulative freshmen GPA, and persistence. Table 3 displays summary statistics, reliabilities and intercorrelations for minority and nonminority students, respectively.

DATA ANALYSES

Given the exploratory nature of this study, a two-step structural equation modeling procedure recommended by Joreskog (1993), Anderson and Gerbing (1988), and Castaneda (1993) was employed in estimating parameters. Stage one consisted of an exploratory factor analysis (EFA) used to estimate the measurement model prior to testing the structural model. In stage two, the hypothesized casual model was estimated for both minority and nonminority students. After PRELIS 2 (Joreskog and Sorbom, 1993) was used to produce a polyserial/polychoric correlation matrix, an asymptotic variance-covariance matrix was estimated to correct for possible violations to the assumption of bivariate normal distribution. The structural model was then analyzed using the LISREL 8 computer program (Joreskog and Sorbom, 1993). LISREL also provides indicators used to judge the goodness-of-fit of the model and for specific parameters in the model. As to statistical significance of the structural paths, one tailed t-tests were employed since the model hypothesized directional effects among the constructs.

LIMITATIONS

Four main limitations associated with this study include that it (1) focuses only on a single institution, (2) is limited in sample size to just over half of an entering class, (3) lacks agreed upon definitions of motivational constructs, and (4) restricts measures of motivation to a particular moment in time.

RESULTS

The primary purpose of this study was to investigate the role of precollege variables, motivational factors, and persistence behaviors among minority and nonminority students. Table 1 describes the 10 measures analyzed in this study. There were five precollege variables (gender, ethnicity, parental education, financial aid status and high school rank), three motivational factors (desire to finish college, institutional impression, and family emotional support), and two behavioral variables (cumulative freshmen GPA and persistence behavior). Comparisons between the sample and the total freshman population with regard to gender, ethnicity, financial aid status, high school rank, cumulative

freshman GPA, and persistence behavior indicated that the sample was representative of the population. Table 2 depicts the results of the factor analysis. Factor loadings, reliability scores and percent variance explained indicate that these three factors are a valid representation of motivational indicators for this sample. Scaled scores for the motivational constructs were based on averages across respective items. Parents education was taken as the sum of the mother and father's educational level.

Table 3 displays summary statistics and reliabilities for minorities and nonminorities, respectively. Reliability coefficients for both minorities and nonminorities indicated a high degree of consistency among the various items used to measure the three motivational constructs. Cronbach alphas ranged from .70 to .87. Significant differences between minorities and nonminorities across the nine measures indicated that, on the average, minorities were more likely to have lower high school rank, parents with less education and less emotional support, lower cumulative GPA, and lower persistence rates.

Tables 4 through 8 report the structural coefficients associated to testing the model in both minorities and nonminorities. The chi-square of the model for minorities was 27.03 (df=4; $p=.0000$) and 38.82 (df=4; $p=.0000$) for nonminorities. All indicators except Chi-square lend support for the model.

Desire to Finish College

The first structural equation in the quantitative model for both groups examined the effects of the background variables sex, high school rank, parents education and financial aid status on measures of Desire to Finish College (see Table 4).

Minorities: Two variables, sex ($\beta=0.565$) and financial aid status ($\beta=0.251$), exerted significant direct effects on desire to finish college (see Table 4). The most important variable affecting the desire to finish college of minority students was sex. Female minority students were more likely to have an enhanced desire to finish college than male minority students. Minority students who were receiving some type of financial aid were more likely to have an enhanced desire to finish college. Sex and financial aid status accounted for 40 percent of the variance in minorities' desire to finish college ($R^2=0.404$).

Nonminorities: With the addition of parental education, similar findings were found for nonminority students with regard to desire to finish college. Parental education ($\beta=0.136$) exerted significant direct effects on desire to finish college. Again, the most important variable affecting nonminority desire to finish college was gender ($\beta=0.503$) followed by financial aid status ($\beta=0.400$) and parental education. All three factors explained 40 percent of the variance in nonminorities' Desire to Finish College ($R^2=0.396$).

Impressions of the Institution

The second structural equation examined the effects of sex, high school rank, parental education, and financial aid status on measures of institutional impression. For both groups, all but parental education were found to have significant direct effects on impressions of the institution. For nonminorities, sex was the most important variable affecting impression. For both groups, those most favorably impressed with the institution tended to be female, students receiving financial aid, and those not ranking very high in their high school class. Forty-two percent of the variance in impression was explained for minorities, whereas 33 percent of the variance was explained for nonminorities (see Table 5).

Family Emotional Support

The third structural equation tested the effects of sex, high school rank, parental education, and financial aid status on family emotional support. Differences were found between minorities and nonminorities (see Table 6).

Minorities: Among minorities, those exhibiting the strongest family emotional support tended to be female and students receiving financial aid. Only a fifth of the variance was explained by the two factors.

Nonminorities: Among nonminorities, those with the strongest family emotional support were more likely to be female, students on financial aid, those whose parents had more education, and students who did not rank very high in their high school class. These factors accounted for 33 percent of the variance observed in nonminorities' family emotional support ($R^2=0.328$).

Grade Point Average

The fourth structural equation in the model examined the effects of all background and motivational variables on cumulative freshman grade point average (GPA). Differences were found between minorities and nonminorities (see Table 7).

Minorities: Six of seven factors were found to be significant in explaining first-year cumulative grade point average. The most influential factor on students' GPA was exerted by high school rank ($\gamma=0.648$) followed by financial aid ($\gamma=-0.399$), impression ($\beta=0.360$), sex ($\gamma=-0.303$), parental education ($\gamma=-0.177$), and desire to finish college ($\beta=0.169$). Family emotional support ($\beta=0.096$) was found not to have any significant effects on GPA. The model explained 40 percent of the variance observed in minorities' GPA.

Nonminorities: Nonminority students' GPAs were more likely to be higher during their first year in college if the students entered college with enhanced high school rank ($\gamma=0.591$), strong family emotional support ($\beta=0.153$), female ($\gamma=-0.135$), and parents with advanced education ($\gamma=0.125$). Neither

financial aid status, desire to finish college, nor institutional impression significantly affected GPA for nonminorities. The model explained 40 percent of the variance observed in nonminorities' GPA.

Persistence

The last structural equation tested the effects of sex, high school rank, parents cumulative education, financial aid status, desire, impression, family emotional support, and cumulative grade point averages on actual persistence behavior. High school rank and parents education were found not to exert a significant direct effect on persistence for either minorities or nonminorities. These variables did, however, exhibit differential indirect effects (see Table 8).

Minorities: Five of the eight variables were found to have a significant direct effect on student persistence for minority students: sex ($\gamma = -0.337$), desire ($\gamma = 0.379$), impression ($\gamma = 0.280$), family emotional support ($\gamma = 0.370$), and grade point average ($\beta = 0.314$). Financial aid status was found to exert significant indirect effects ($\gamma = 0.325$). For minorities, these factors explained 51 percent ($R^2 = 0.514$) of the variance observed in persistence decisions.

Nonminorities: All but two variables (i.e., high school rank and parents education) were found to have direct influences on student persistence for nonminorities. Similar to minorities, financial aid status was found to exert an indirect effect ($\gamma = 0.447$). Unlike minorities, however, parents' education was found to have a significant indirect effect ($\gamma = 0.182$). The model explained 45 percent ($R^2 = 0.447$) of the variance in nonminorities' persistence decisions.

Total Effects

Table 8 reports the total effects of all variables on persistence for both minority and nonminority students. For minorities and nonminorities, all factors with the exception of sex were found to have significant total effects on withdrawal decisions. The largest total effect on persistence for both groups was exerted from desire to finish college (nonminority = 0.409; minority = .432).

DISCUSSION

Overall, the findings indicate that the hypothesized causal model was valid in explaining pre-college motivational factors of both minorities and nonminorities in college and subsequent outcomes including academic performance and persistence. Of the 27 relationships hypothesized in the model, support was found for 18 (66 percent) of the interrelationships among minorities and 20 (74 percent) for nonminorities. With respect to the three motivational constructs of desire to finish college, institutional impression, and family emotional support, as well as the outcome variable of college academic performance, the model explained as much variance among minorities as it did among

nonminorities (40.4 percent versus 39.6 percent, 42 percent versus 33 percent, 20 percent versus 33 percent, and 40.0 percent versus 40.4 percent, respectively). Nearly all (88 percent) of the factors associated with both groups that were believed to have an overall effect on student persistence were found to be significant. Moreover, the model accounted for over half (51 percent) of the variance in minority student persistence and nearly half (45 percent) in nonminority persistence.

In summary, this paper specified and estimated a model describing minority and nonminority student motivation to persist and the factors that influence each group. It is argued that there is an indirect but important link between student's motivation and persistence behavior and that this link is via desire to finish college, impression of the institution, and family emotional support.

This research is significant in two respects. First, it empirically verifies the conventional wisdom that motivation affects behavior and is responsible at least in part for influencing academic achievement. Second, the findings of this study also suggest the possibility of theoretical linkages between precollege motivational factors and student departure. This investigation found significant relationships between magnitude of motivation and student persistence. Whereas this study does not examine the relationships among motivation, student commitments and integration, and subsequent persistence decisions, it leads one to conjecture that there may be some connections between theories of motivation and the Tinto model. Precollege motivation may be a psychological component of "getting ready" behaviors to be associated with subsequent persistence decisions of students. This would be consistent with Attinasi's (1989) study of college attendance and persistence of Mexican-American youth. Future studies may want to pursue the possible connections between theories of student departure and motivation for various ethnic groups.

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FIG. 1. Hypothesized Causal Model

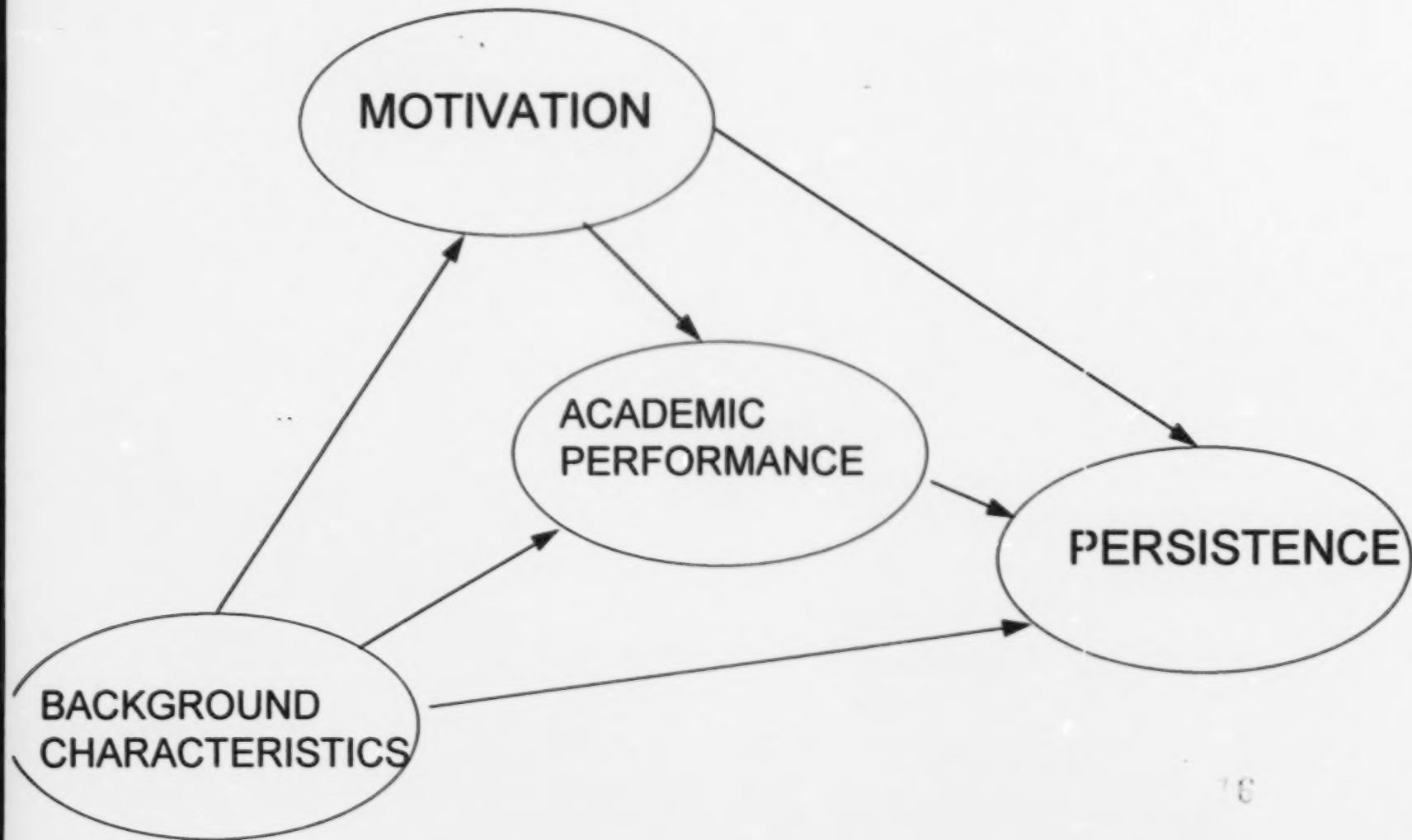


TABLE 1 Listing and Definition of Variables

	<u>VARIABLES</u>	<u>SOURCE</u>	<u>DEFINITIONS</u>
1.	Gender	University Records	1=Male, 2=Female
2.	Ethnicity	University Records	1=White, 3=Hispanic 2=Black, 4=Other
3.	Parental Education	College Student Inventory	Composite of the education level of the mother and father [Alpha=.70]: 1=8 years or less, 7=Doctoral degree
4.	Financial Aid	University Records	1=No aid, 2=Aid
5.	HS Rank	University Records	
6.	GPA	University Records	Cumulative one year GPA
7.	Desire to Finish College	College Student Inventory	Composite of 6 items [Alpha=.76]: 1=Not at all true, 7=Completely true
8.	Institutional Impression	College Student Inventory	Composite of 7 items [Alpha=.85]: 1=very dissatisfied, 7=Completely satisfied
9.	Family Emotional Support	College Student Inventory	Composite of 6 items [Alpha=.81]: 1=Not at all true, 7=Completely true
10.	Persistence Behavior	University Records and Texas Higher Education Coordinating Board	1=Dropped after 1 year, no transfer, 2=Returned for 2nd. year

TABLE 2 Factor Analysis Summary: Specific Item Loadings, and Percent Variance Explained for the Three Factors of Motivation for College.

Factor/Item		<u>Loading</u>	<u>Cronbach Alpha</u>
I. Desire to Finish College (Desire)			0.76
1.	I can think of many things I'd rather do than go to college. (R)	.69	
2.	I often wonder if a college education is really worth all the time, money, and effort that I'm being asked to spend on it. (R)	.64	
3.	I dread the thought of going to school for several more years. (R)	.63	
4.	I would readily leave college if I found a well paying job. (R)	.61	
5.	I am strongly dedicated to finishing college no matter what obstacles get in my way.	.61	
6.	I am quite confident that my decision to go to college was the right thing for me.	.56	
Percent Variance Explained = 6.6			
II Institutional Impression (Impression)			0.85
7.	The social life (both on and off campus).	.74	
8.	The general characteristics of the student body.	.73	
9.	The entertainment available at or near the institution.	.73	
10.	Shopping facilities at or near the institution.	.68	
11.	The condition and appearance of buildings	.67	
12.	The faculty in general.	.66	
13.	The intercollegiate athletic program and grounds.	.64	

Percent Variance Explained = 24.6

III Family Emotional Support (Family) 0.81

14.	When I was a child my parents usually understood me, respected my judgement, and treated me in ways that helped me grow.	.76
15.	My family and I communicate very well, and we understand each others point of view.	.76
16.	My family has a one-sided way of looking at me, and they don't understand my feelings. (R)	.71
17.	My parents have been very helpful in teaching me how to get along with people.	.68
18.	My parents have paid little attention to my schooling, and they haven't done much to help me. (R)	.62
19.	I don't agree with many of the lessons my parents tried to teach me. (R)	.55

Percent Variance Explained=8.3

NOTE: An "R" denotes a negatively phased and reverse scored item.

Table 3

Differences and Intercorrelations (Polychoric) in Precollege variables, Motivations, and Behavior among Minority and Nonminority students.

	Minority (n=139)		Alpha	Nonminority (n=442)			t-values	Correlations								
	M	SD		M	SD	Alpha		1	2	3	4	5	6	7	8	9
Measures																
Sex	1.54	.50	-	1.51	.50	-	-.067	-	.231	-.147	.079	.407	.190	-.015	.177	.064
HS Rank	65.07	20.44	-	72.72	19.46	-	3.99**	.223	-	.001	.288	.238	.180	.048	.494	.389
Parent Ed	5.97	2.46	.747	8.17	1.96	.593	9.65**	-.076	.069	-	-.211	-.031	-.082	.009	-.047	.130
Fin. Aid	1.76	.43	-	1.68	.47	-	-1.77	.053	.361	-.183	-	.258	.092	-.039	.150	.071
Desire	5.45	1.07	.697	5.54	1.10	.789	.89	.274	.237	-.018	.087	-	.411	.376	.190	.368
Impression	5.31	1.08	.874	5.37	.95	.847	.60	.187	.148	-.099	.081	.429	-	.393	.211	.166
Family	5.06	1.35	.824	5.42	1.16	.804	2.81**	.256	.145	.118	.069	.394	.351	-	.051	.170
GPA	2.03	.99	-	2.47	.94	-	4.72**	.140	.610	.184	.283	.170	.074	.186	-	.756
Persistence	1.68	.47	-	1.78	.42	-	2.38*	.003	.333	.164	.104	.184	.145	.168	.589	-

p < .05

* p < .01

Notes: Matrix above the diagonal is for minorities; below the diagonal for nonminorities.
 Composite variables Desire, Impression, and Family scored as:
 (1) Not all true or very dissatisfied to (7) completely true or very satisfied.

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Table 4.

Direct, Indirect, and Total Effects on Desire to Finish College

Measure	<u>Minority Students</u>			<u>Nonminority Students</u>		
	Direct	Indirect	Total	Direct	Indirect	Total
1. Sex	.565**	-	.565**	.503**	-	.503**
2. H. S. Rank	.010	-	.010	-.074	-	-.074
3. Parent Ed.	.099	-	.099	.136*	-	.136*
4. Fin. Aid	.251**	-	.251**	.400**	-	.400**
5. Desire	-	-	-	-	-	-
6. Impression	-	-	-	-	-	-
7. Family	-	-	-	-	-	-
8. GPA	-	-	-	-	-	-
9. Persistence	-	-	-	-	-	-
	R2=.404			R2=.396		

*p<.05

**p<.01

Table 5.

Direct, Indirect, and Total Effects on Impression of the Institution

Measure	<u>Minority Students</u>			<u>Nonminority Students</u>		
	Direct	Indirect	Total	Direct	Indirect	Total
1. Sex	.453**	-	.453**	.442**	-	.442**
2. H. S. Rank	-.135*	-	-.135*	-.205**	-	-.205**
3. Parent Ed.	.125	-	.125	.028	-	.028
4. Fin. Aid	.503**	-	.503**	.431**	-	.431**
5. Desire	-	-	-	-	-	-
6. Impression	-	-	-	-	-	-
7. Family	-	-	-	-	-	-
8. GPA	-	-	-	-	-	-
9. Persistence	-	-	-	-	-	-

• R2=.419

R2=.327

*p<.05

**p<.01

Table 6.

Direct, Indirect, and Total Effects on Family Emotional Support

<u>Measure</u>	<u>Minority Students</u>			<u>Nonminority Students</u>		
	<u>Direct</u>	<u>Indirect</u>	<u>Total</u>	<u>Direct</u>	<u>Indirect</u>	<u>Total</u>
1. Sex	.311**	-	.311**	.461**	-	.461**
2. H. S. Rank	-.126	-	-.126	-.188**	-	-.188**
3. Parent Ed.	.129	-	.129	.257**	-	.257**
4. Fin. Aid	.361**	-	.361**	.388**	-	.388**
5. Desire	-	-	-	-	-	-
6. Impression	-	-	-	-	-	-
7. Family	-	-	-	-	-	-
8. GPA	-	-	-	-	-	-
9. Persistence	-	-	-	-	-	-
	R2=.197			R2=.328		

*p<.05

**p<.01

Table 7.Direct, Indirect, and Total Effects on GPA

<u>Measure</u>	<u>Minority Students</u>			<u>Nonminority Students</u>		
	<u>Direct</u>	<u>Indirect</u>	<u>Total</u>	<u>Direct</u>	<u>Indirect</u>	<u>Total</u>
1. Sex	-.303**	.288**	-.015	-.135*	.094	-.041
2. H. S. Rank	.648**	-.059	.589	.591**	-.031	.560**
3. Parent Ed.	-.177**	.074	-.103	.125*	.047	.172**
4. Fin. Aid	-.399**	.258**	-.141*	-.003	.077	.074
5. Desire	.169*	-	.169*	.056	-	.056
6. Impression	.360**	-	.360**	-.011	-	-.011
7. Family	.096	-	.096	.153*	-	.153*
8. GPA	-	-	-	-	-	-
9. Persistence	-	-	-	-	-	-
	R2=.400			R2=.404		

*p<.05

**p<.01

Table 8.

Direct, Indirect, and Total Effects on Persistence

Measure	<u>Minority Students</u>			<u>Nonminority Students</u>		
	Direct	Indirect	Total	Direct	Indirect	Total
1. Sex	-.337**	.451**	.114	-.434**	.470**	.036
2. H. S. Rank	.069	.104	.173*	.116	.030	.146*
3. Parent Ed.	.062	.088	.150*	-.009	.182**	.173**
4. Fin. Aid	-.125	.325**	.200**	-.234**	.447**	.213**
5. Desire	.379**	.053	.432**	.390**	.019	.409**
6. Impression	.280**	.113	.393**	.407**	-.004	.403**
7. Family	.370**	.030	.400**	.234**	.051	.285**
8. GPA	.314**	-	.314**	.333**	-	.333**
9. Persistence	-	-	-	-	-	-
	R2=.514			R2=.447		

*p<.05 **p<.01